

# TEST REPORT

of

FCC CFR 47 part 1, 1.1307(b), 1.1310

FCC ID: WA2ST4955

Equipment Under Test : Tracking Device  
Model Name : ST4955  
Variant Model Name(s) : -  
Applicant : Suntech International Ltd.  
Manufacturer : Suntech International Ltd.  
Date of Receipt : 2021.10.29  
Date of Test(s) : 2021.11.08 ~ 2021.12.16  
Date of Issue : 2021.12.17

In the configuration tested, the EUT complied with the standards specified above. This test report does not assure KOLAS accreditation.

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  - 2) The SGS Korea is not responsible for the sampling, the results of this test report apply to the sample as received.
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Tested by:



Teo Kim

Technical  
Manager:



Jinhyoung Cho

**SGS Korea Co., Ltd. Gunpo Laboratory**



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## 1. General Information

### 1.1. Testing Laboratory

SGS Korea Co., Ltd. (Gunpo Laboratory)

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- Designation number: KR0150

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### 1.2. Details of Applicant

Applicant : Suntech International Ltd.  
 Address : A-1705, 1706, Greatvalley, 32, Digital-ro 9-gil, Geumchon-Gu, Seoul, South Korea, 08512  
 Contact Person : Yo-han, Kim  
 Phone No. : +82 2 6327 5661

### 1.3. Details of Manufacturer

Company : Same as applicant  
 Address : Same as applicant

### 1.4. Description of EUT

<b>Kind of Product</b>	Tracking Device
<b>Model Name</b>	ST4955
<b>Power Supply</b>	DC 12 V
<b>Frequency Range</b>	2 402 MHz ~ 2 480 MHz (Bluetooth Low Energy) 2 412 MHz ~ 2 462 MHz (11b/g/n_HT20)
<b>Modulation Technique</b>	DSSS, OFDM, GFSK
<b>Number of Channels</b>	40 channels (Bluetooth Low Energy) 11 channels (11b/g/n_HT20)
<b>Antenna Type</b>	Chip antenna
<b>Antenna Gain*</b>	2 400 MHz ~ 2 483.5 MHz: 1.99 dBi (Bluetooth Low Energy) 2 400 MHz ~ 2 483.5 MHz: 1.99 dBi (WLAN 2.4 G)

### 1.5. Test Report Revision

Revision	Report Number	Date of Issue	Description
0	F690501-RF-RTL002764	2021.12.17	Initial

## 2. RF Exposure Evaluation

### 2.1. Environmental evaluation and exposure limit according to FCC CFR 47 part 1, 1.1307(b), 1.1310

#### LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm <sup>2</sup> )	Average Time
(A) Limits for Occupational/Controlled Exposure				
0.3-3.0	614	1.63	*100	6
3.0-30	1842/f	4.89/f	*900/f <sup>2</sup>	6
30-300	61.4	0.163	1.0	6
300-1 500	-	-	f/300	6
1 500-100 000	-	-	5	6
(B) Limits for General Population/Uncontrolled Exposure				
0.3-1.34	614	1.63	*100	30
1.34-30	824/f	2.19/f	*180/f <sup>2</sup>	30
30-300	27.5	0.073	0.2	30
<b><u>300-1 500</u></b>	-	-	<b><u>f/1500</u></b>	<b><u>30</u></b>
<b><u>1 500-100 000</u></b>	-	-	<b><u>1.0</u></b>	<b><u>30</u></b>

#### 2.1.1. Friis transmission formula: $P_d = (P_{out} \cdot G) / (4 \cdot \pi \cdot R^2)$

Where  $P_d$  = power density in  $mW/cm^2$

$P_{out}$  = output power to antenna in  $mW$

$G$  = gain of antenna in linear scale

$R$  = distance between observation point and center of the radiator in  $cm$

$P_d$  the limit of MPE,  $1 mW/cm^2$ . If we know the maximum gain of the antenna and the total power input to the antenna, through the calculation, we will know the distance where the MPE limit is reached.

### 2.1.2. Test Result of RF Exposure Evaluation

Test Item : RF Exposure Evaluation Data

Test Mode : Normal Operation

### 2.1.3. Output Power into Antenna & RF Exposure Evaluation Distance

#### Bluetooth Low Energy

##### - Maximum tune up tolerance

Frequency (MHz)	Maximum Average Output Power (dB m)	Antenna Gain (dB i)	Power Density at 20 cm (mW/cm <sup>2</sup> )	Limits (mW/cm <sup>2</sup> )
2 400 ~ 2 483.5	-1	1.99	0.000 250	1

#### WLAN (2.4G)

##### - Maximum tune up tolerance

Frequency (MHz)	Maximum Average Output Power (dB m)	Antenna Gain (dB i)	Power Density at 20 cm (mW/cm <sup>2</sup> )	Limits (mW/cm <sup>2</sup> )
2 400 ~ 2 483.5	14	1.99	0.007 902	1

#### LTE - Band 2

##### - Maximum tune up tolerance

Frequency Range (MHz)	Maximum Average Output Power (dB m)	Antenna Gain (dB i)	Power Density at 20 cm (mW/cm <sup>2</sup> )	Limits (mW/cm <sup>2</sup> )
1 850 ~ 1 910	22	1.50	0.044 538	1

#### LTE - Band 4

##### - Maximum tune up tolerance

Frequency Range (MHz)	Maximum Average Output Power (dB m)	Antenna Gain (dB i)	Power Density at 20 cm (mW/cm <sup>2</sup> )	Limits (mW/cm <sup>2</sup> )
1 710 ~ 1 755	22	1.47	0.044 231	1

#### LTE - Band 5

##### - Maximum tune up tolerance

Frequency Range (MHz)	Maximum Average Output Power (dB m)	Antenna Gain (dB i)	Power Density at 20 cm (mW/cm <sup>2</sup> )	Limits (mW/cm <sup>2</sup> )
824 ~ 849	22	1.01	0.039 786	0.55

**LTE - Band 12**

**- Maximum tune up tolerance**

Frequency Range (MHz)	Maximum Average Output Power (dB m)	Antenna Gain (dB i)	Power Density at 20 cm (mW/cm <sup>2</sup> )	Limits (mW/cm <sup>2</sup> )
699 ~ 716	22	-0.84	0.025 985	0.47

**LTE - Band 13**

**- Maximum tune up tolerance**

Frequency Range (MHz)	Maximum Average Output Power (dB m)	Antenna Gain (dB i)	Power Density at 20 cm (mW/cm <sup>2</sup> )	Limits (mW/cm <sup>2</sup> )
777 ~ 787	22	0.52	0.035 541	0.52

**Note;**

- Bluetooth low energy and WLAN can not transmitter simultaneously.
- Bluetooth low energy and WWAN can transmitter simultaneously.
- WLAN and WWAN can transmitter simultaneously.
- The power density Pd (5th column) at a distance of 20 cm calculated from the friis transmission formula is far below the limit of 1 mW/cm<sup>2</sup>.
- This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment.
- This equipment should be installed and operated with minimum 20 cm between the radiator and your body.
- The antenna gain of this transmitter is less than 6 dB i and must not be collocated or operating in conjunction with any other antenna or transmitter unless authorized to do so by the FCC.
- According to KDB 447498 D01 RF Exposure Guidance 4.1.

**Simultaneous transmission of RF Exposure test exclusion for worst case configuration.**

WLAN: the ratio is 0.007 902 / 1  
 WWAN: the ratio is 0.039 786 / 0.55

Confirm the sum result of individual MPEs ratio is ≤ 1.0;  
 WLAN + WWAN: (0.007 902 / 1) + (0.039 786 / 0.55) = 0.080 240 ≤ 1.0

**- End of the Test Report -**